

Claims:

1. A gasoline fuel composition, having in combination
 - an octane value (R+M)/2 of at least 85;
- 5 - an aromatics content less than 25 vol-%;
- a water-soluble ethers content less than 1 vol-%;
- a 10% D-86 distillation point no greater than +150°F (65.6 °C);
- a 50% D-86 distillation point no greater than +230°F (110 °C);
- a 90% D-86 distillation point no greater than +375°F (190.6 °C);
- 10 - Reid Vapor Pressure of less than 9.0 psi (62 kPa);
- a content of light olefins, with a boiling point below +90 °C, of less than 6 vol. %; and
- a combined content of trimethylpentenes, trimethylhexenes and trimethylheptenes greater than 1 vol. %.
- 15 2. The gasoline fuel composition according to claim 1, having combined content of trimethylpentenes, trimethylhexenes and trimethylheptenes of 2 to 30 vol. %.
3. The gasoline fuel composition according to claim 2, having a content of iso-octene in the range of 5 to 20 vol. %.
- 20 4. The gasoline fuel composition according to claim 1, further containing 0.1 to 20 vol. % of isoparaffines.
- 25 5. The gasoline fuel composition according to claim 4, wherein the total content of isoolefins and isoparaffins is 2 to 40 vol. %.
6. The gasoline fuel composition according to claim 1, wherein the total content of olefins is less than 20 vol. %.
- 30 7. The gasoline fuel composition according to claim 1, further having an ethanol content of 0.01 to less than 6 vol. %.

8. The gasoline fuel composition according to claim 1, wherein the concentration of oxygen is 0.1 to 5 mass %.

9. A gasoline fuel composition, having in combination

- 5 - an octane value $(R+M)/2$ of at least 85;
- an aromatics content less than 25 vol. %; and
- a water-soluble ethers content of less than 1 vol. %;

wherein said composition has a content of olefins, at least 10 % of which is formed by heavy olefins having a boiling point above +90 °C.

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10. A gasoline fuel composition, having in combination

- an octane value $(R+M)/2$ of at least 85;
- an aromatics content less than 25 vol. %; and
- a water-soluble ethers content of less than 1 vol. %;

- 15 wherein said composition contains up to 40 % olefins, and it contains less than 6 vol.-% of light olefins having a boiling point below +90 °C, and at least 1 vol.-% heavy branched olefins having a boiling point above +90 °C.

11. A method of reducing the emissions of an automotive engine of one or more pollutants selected from the group consisting of CO, NO_x, particulates and hydrocarbons compared to combusting CARB 2 fuel, comprising

- a) introducing into said automotive engine an unleaded gasoline according to claim 1 or 10
- b) combusting the unleaded gasoline in said engine;
- 25 c) introducing at least some of the resultant engine exhaust emissions into the catalytic converter; and
- d) discharging emissions from the catalytic converter to the atmosphere.

12. The method according to claim 11, wherein the gasoline further contains 0.01 to 6 vol. % ethanol.

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